

A photograph of a wind farm in a field at sunset. The sun is low on the horizon, creating a bright orange glow and long shadows. Several wind turbines are visible, silhouetted against the sky. The foreground is a field of tall grass or grain.

# REC and GHG Treatment in the EIM

September 7, 2017  
Energy Imbalance Market, Regional Issues Forum

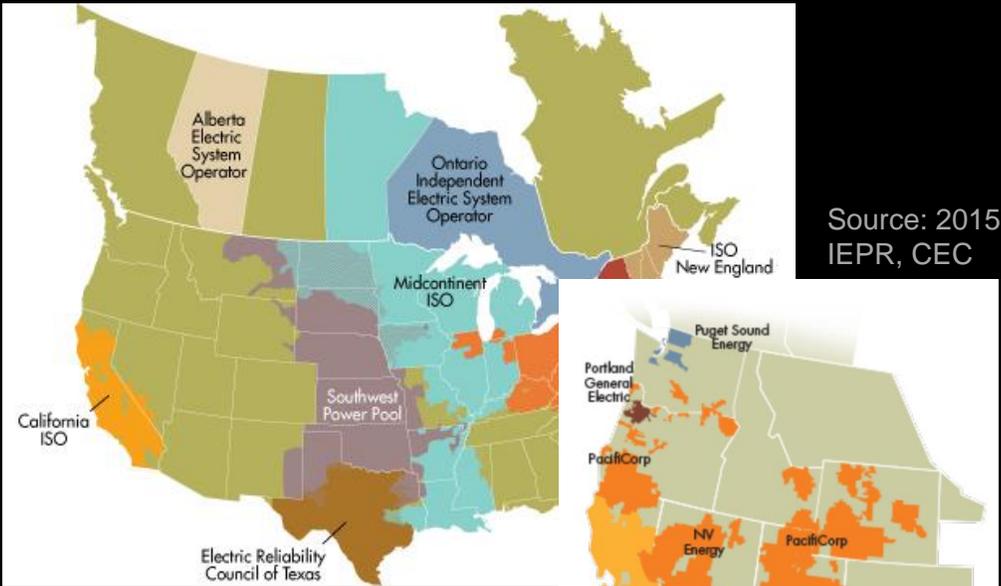




# Outline

- Why should ISO and EIM care about renewable energy and carbon accounting?
- Voluntary renewable energy market introduction
- California's imports policy
- Seams issue: California imports and RECs
- Attributes and energy
- Reactions and solutions to California's imports policy: what can the EIM do?
- The future: implications of limiting use of RECs from California imports outside of California

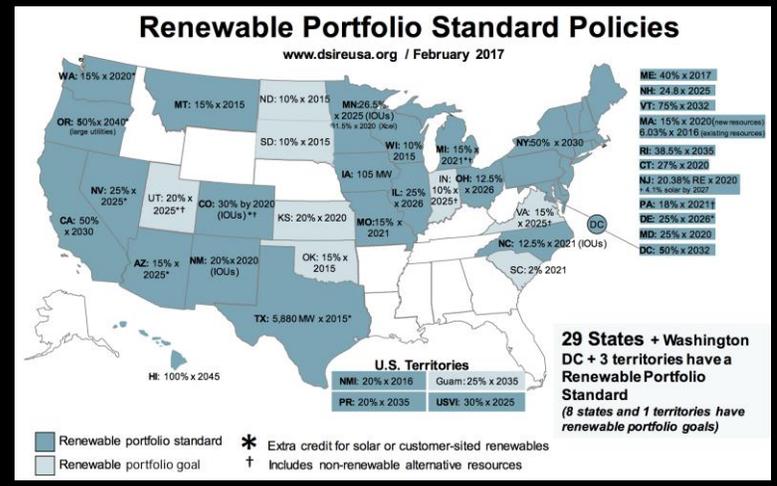
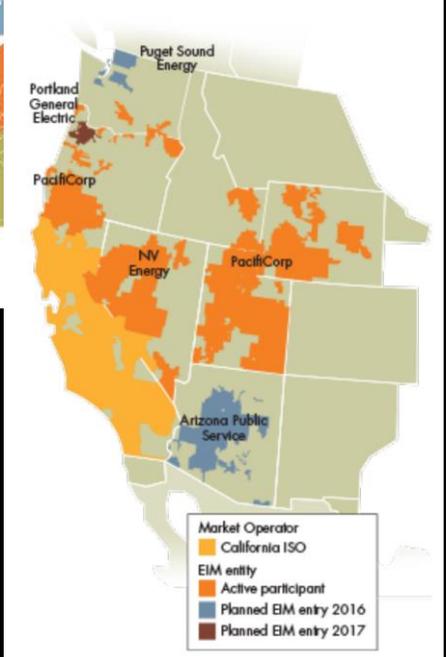
# Why should ISO and EIM care about renewable energy and carbon accounting?



Source: 2015 IEPR, CEC

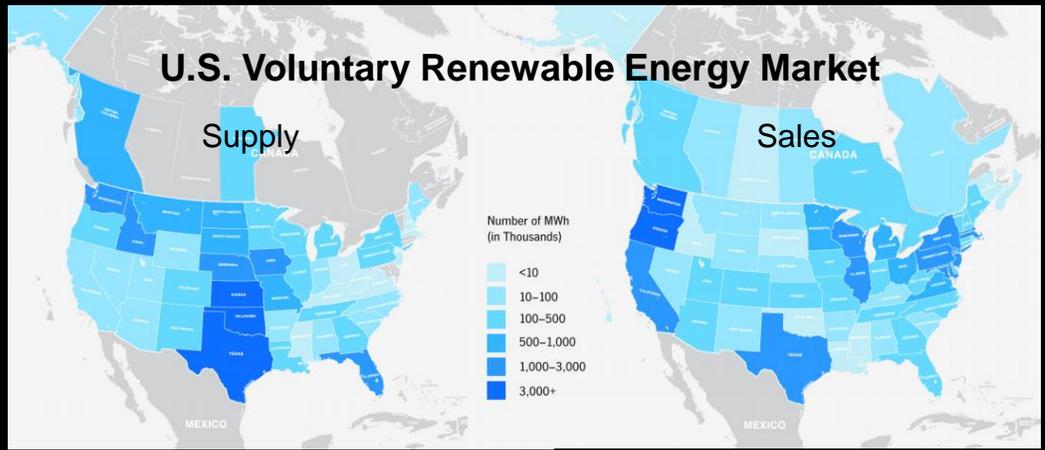
Source: <https://www.caiso.com/about/Pages/OurBusiness/Opening-access.aspx>

## Physical Grid

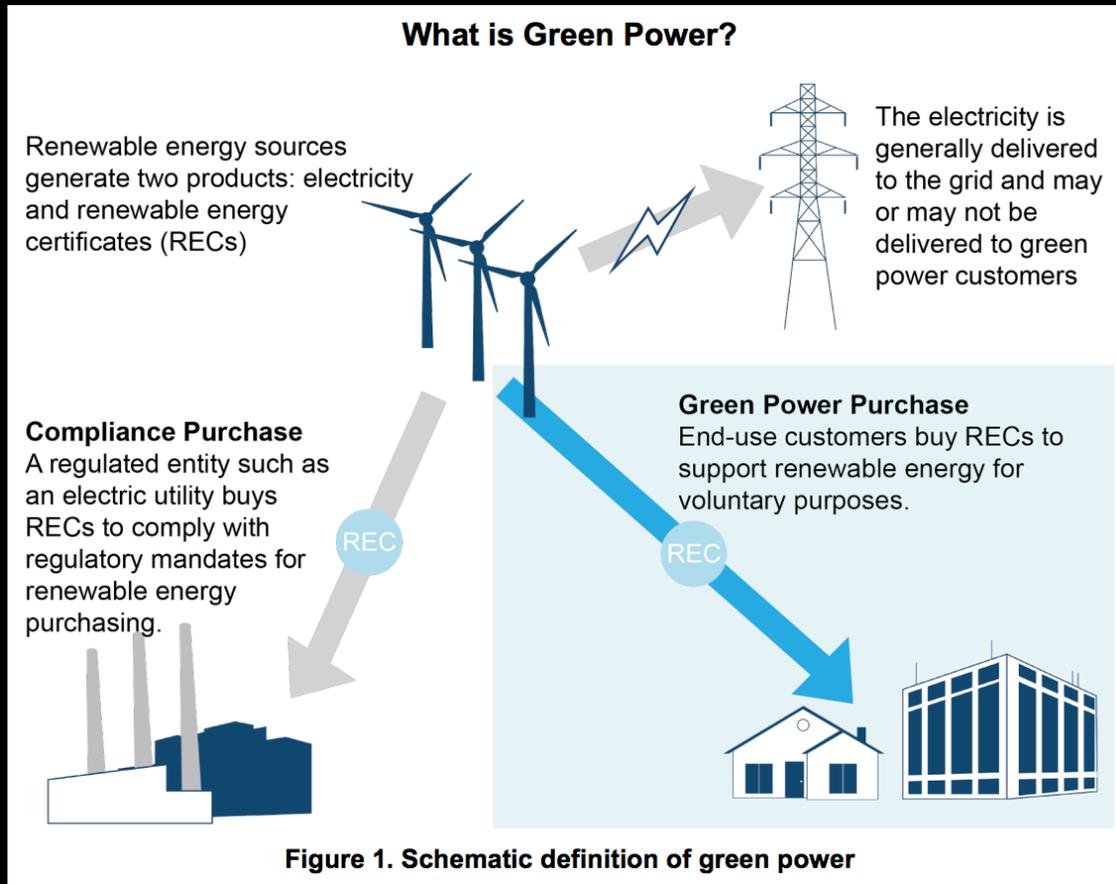


Source: dsireusa.org

## Economic and Policy Instruments



# Renewable Energy Certificates



Source: <https://www.nrel.gov/docs/fy17osti/67147.pdf>.



# GHG Attributes Included in a REC

GHG Attribute of Electricity Generation	Description	Producers/Generators		Consumers	
		How it is related to producers/generators	Producer/Generator uses	How it is related to suppliers and consumers	Supplier and consumer uses
Direct emissions	The direct emissions, emissions profile, or emissions factor associated with the generation.	<ul style="list-style-type: none"> <li>• Direct emissions at point of generation.</li> <li>• The direct (Scope 1) emissions of the generation owner.</li> </ul>	<ul style="list-style-type: none"> <li>• Emissions reporting to regulators.</li> <li>• Compliance with source-based (or production- or generation-based) emissions regulations.</li> </ul>	<p>Delivery and consumption of generation attributes can only be contractually determined or verified. For renewable energy, it is determined and verified via the REC.</p> <ul style="list-style-type: none"> <li>• Delivered and consumed emissions.</li> <li>• The indirect (Scope 2) emissions (part of the carbon footprint) of the consumer.</li> </ul>	<ul style="list-style-type: none"> <li>• Emissions disclosure to customers.</li> <li>• Scope 2 emissions (carbon footprint) accounting/reporting by consumers.</li> <li>• Supplier-specific emissions factor calculations by suppliers.</li> <li>• Tracking emissions for imported electricity.</li> </ul>
Avoided grid emissions	The net change in emissions on the grid due to the generation.	<ul style="list-style-type: none"> <li>• The grid emissions effect of generation.</li> </ul>	<ul style="list-style-type: none"> <li>• Impact statements primarily by low- or zero-emitting sources.</li> <li>• Generating RE-derived carbon offsets (where permitted and in regions without carbon regulations for the power sector).</li> </ul>	<ul style="list-style-type: none"> <li>• The grid emissions effect of delivered and consumed generation.</li> <li>• The grid GHG emissions impact of the generation of the consumer's electricity.</li> </ul>	<ul style="list-style-type: none"> <li>• Calculating the GHG reduction benefits of RE.</li> <li>• Voluntary RE set-aside calculations.</li> <li>• Impact statements by suppliers and consumers.</li> <li>• Characterizing the impact of RE policies.</li> <li>• Designing policies to create impact in terms of emissions.</li> </ul>

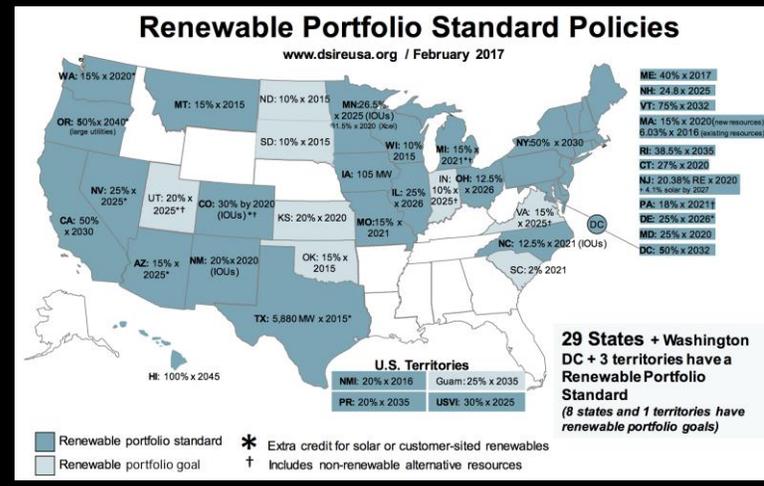
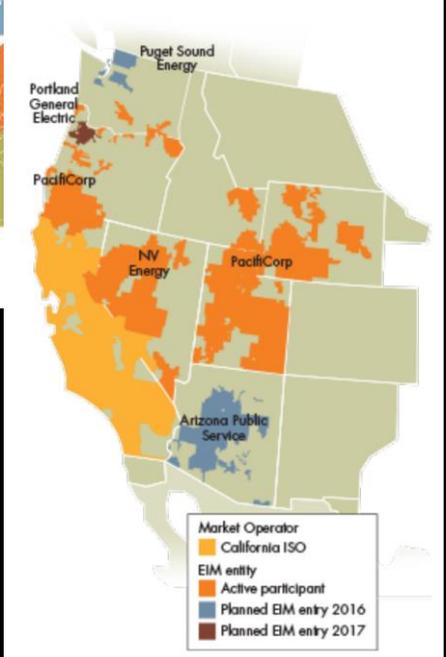
# Why should ISO and EIM care about renewable energy and carbon accounting?



Source: 2015 IEPR, CEC

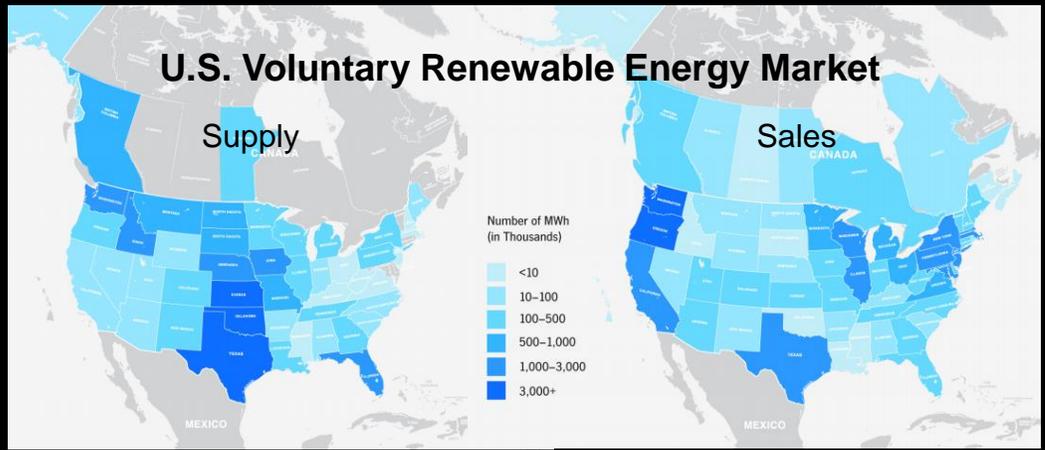
Source: <https://www.caiso.com/about/Pages/OurBusiness/Opening-access.aspx>

## Physical Grid

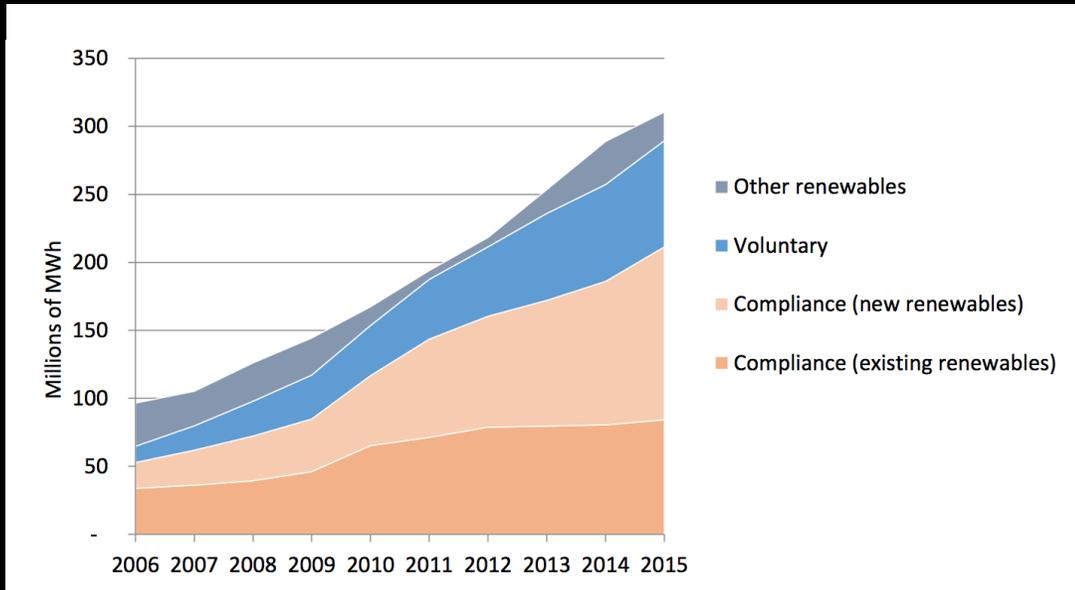


Source: dsireusa.org

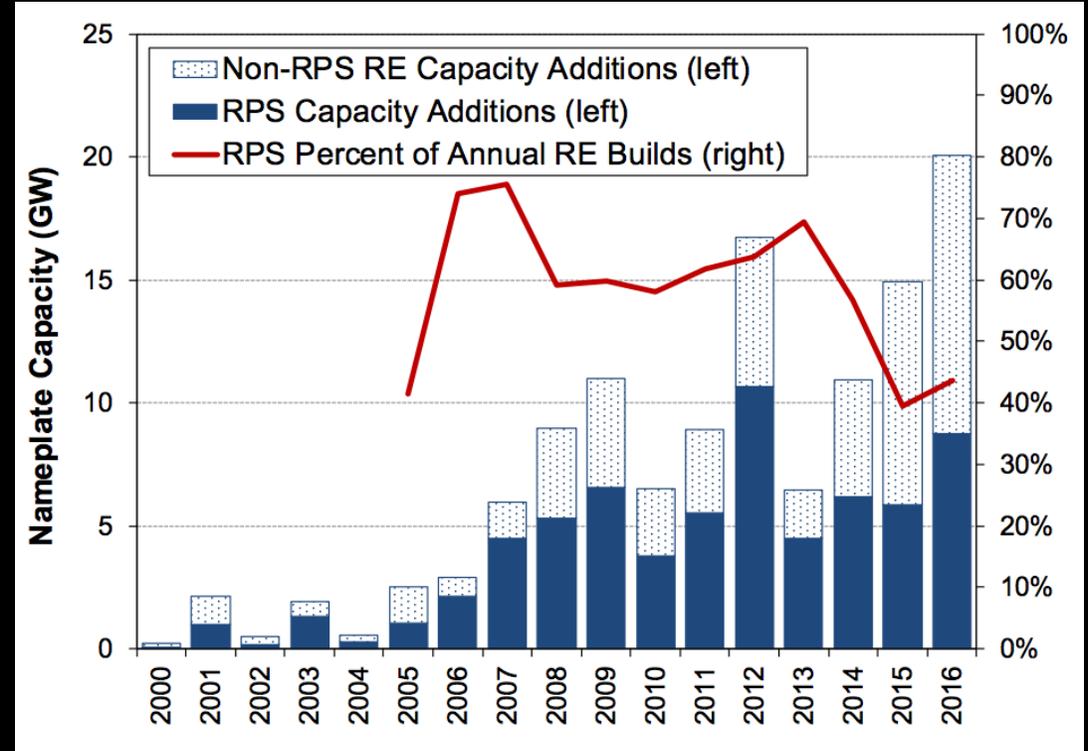
## Economic and Policy Instruments



# Voluntary renewable energy market



Source: National Renewable Energy Laboratory



Source: <https://emp.lbl.gov/sites/default/files/2017-annual-rps-summary-report.pdf>

# California's imports policy

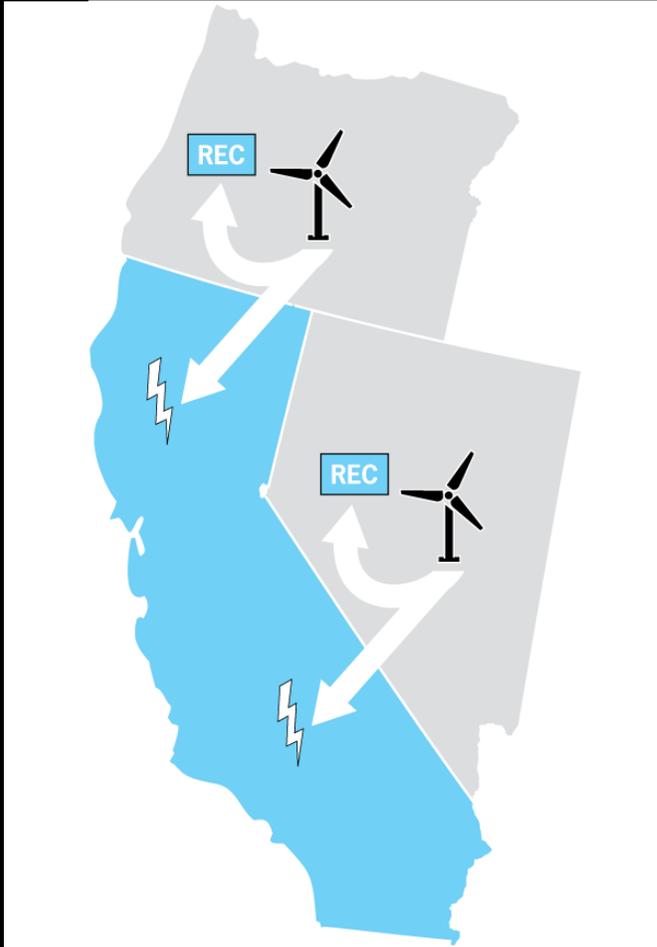
Sec. 94511(a)(4) of the MRR:

*“Imported Electricity from Specified Facilities or Units.* The electric power entity must report all direct delivery of electricity as from a specified source for facilities or units in which they are a generation providing entity (GPE) or have a written power contract to procure electricity.”

# Seams issue: California imports and RECs

- California has cap-and-trade. Neighboring states do not.
- California wants to cover emissions associated with imported power.
- California can't regulate out-of-state generators.
- California regulates imported emissions at the point of the importer.
- California assigns an emissions factor at the point of the importer.
- California reports emissions associated with imported (delivered) power.
- California doesn't require RECs to assign a zero emissions factor to imported power.

# Seams issue: California imports and RECs



## Importing to meet CAISO load

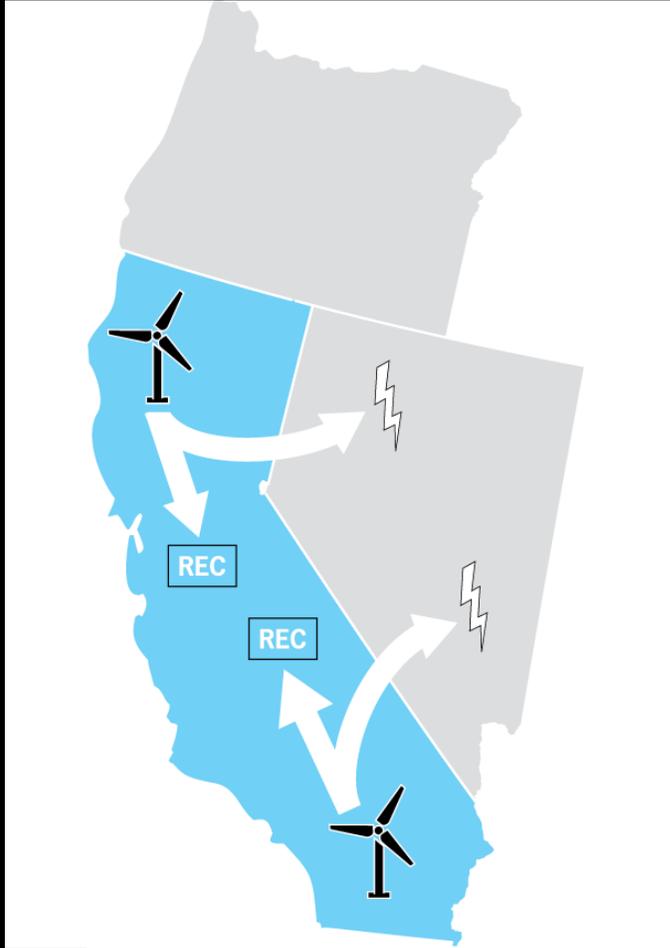
Two undesirable outcomes:

1. Double counting: both RECs and electricity deliver zero emissions  
CA – zero-emissions import (delivery of zero-emissions power to CA)  
OR – RPS delivering zero-emissions RE to customers
2. No double counting, but RECs do not deliver zero emissions without electricity  
CA – zero-emissions import  
OR – RPS not delivering zero-emissions RE to customers

Integrity of the REC is violated as long as California counts a zero emissions import and the REC is used outside of California.

Programs in Oregon and other states, as well as Green-e, can choose whether to accept RECs associated with California imports (for use outside of California).

# Seams issue: California imports and RECs



## Exporting electricity to manage overgeneration

California is consuming/delivering RE to customers based on RECs. Only RECs are needed to deliver RE; electricity is not needed.

No double counting:

CA – in-state zero-emissions production, no compliance obligation

CA – RPS delivering zero-emissions RE to customers

NV – importing null power; no RE delivery or consumption claim

# Seams issue: California imports and RECs



## Exporting electricity and RECs

California is producing zero-emissions power, which is being consumed in Oregon by RPS ratepayers. Nevada is importing null power with the emissions of the residual grid mix.

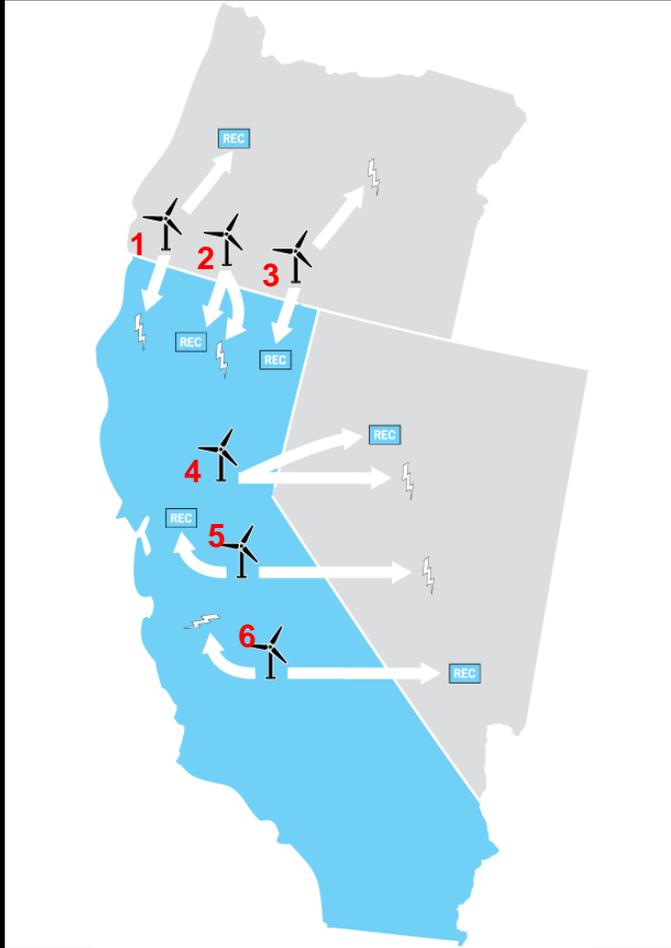
No double counting:

CA – in-state zero-emissions production, no compliance obligation

OR – RPS delivering zero-emissions RE to customers

NV – importing null power; no RE delivery or consumption claim

# Seams issue: California imports and RECs



1. CA importing null power
2. CA importing zero-emissions, renewable power
3. CA importing RE attributes without power
4. CA exporting zero-emissions, renewable power
5. CA exporting null power
6. CA exporting RE attributes without power

## Attributes and energy

- Emissions are not physically delivered.
- Delivery of specified power can only be determined contractually.
- California uses contractual instruments to assign an emissions factor at the point of the importer, just not RECs.
- California's policy on accounting for emissions from imported power is a matter of attributes, not just energy.

# Reactions and solutions to California's imports policy: what can the EIM do?

- Leakage for California.
- Double counted RECs and RECs missing certain attributes are not allowed in Green-e.
- Changing the REC definition is not an option for RPS and voluntary markets.
- Can't identify the RECs associated with power imported into California.
- Mark or tag RECs in WREGIS.
- Can EIM provide information to WREGIS?
- Can EIM add an option to include RECs?

# The future: implications of limiting use of RECs from California imports outside of California

- None of the states are going to meet their goals if they are counting the same RE.
- This will be a growing problem as more and more RE moves across the seam.
- We all want bigger markets for RE.
- We all want RE in the EIM.
- We all want more RE. Double counting gives us half as much.



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**Todd Jones**

Senior Manager, Policy and Climate Change Programs  
[todd.jones@resource-solutions.org](mailto:todd.jones@resource-solutions.org)